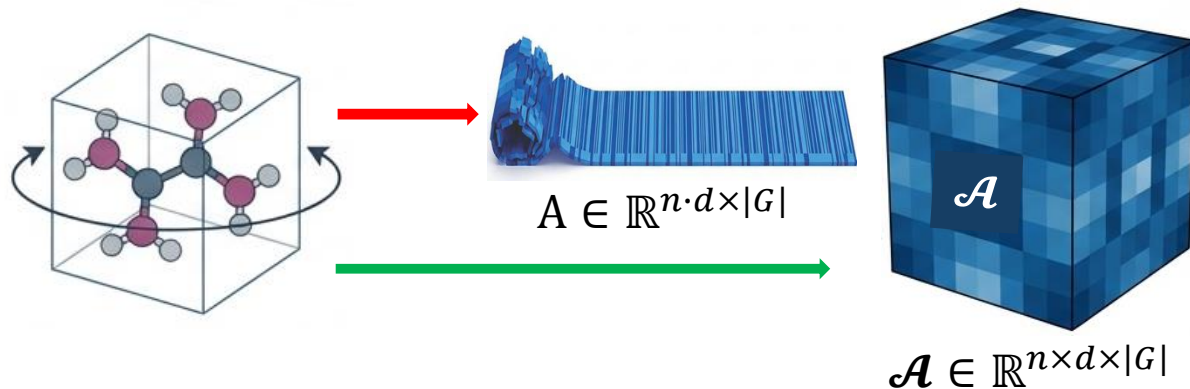


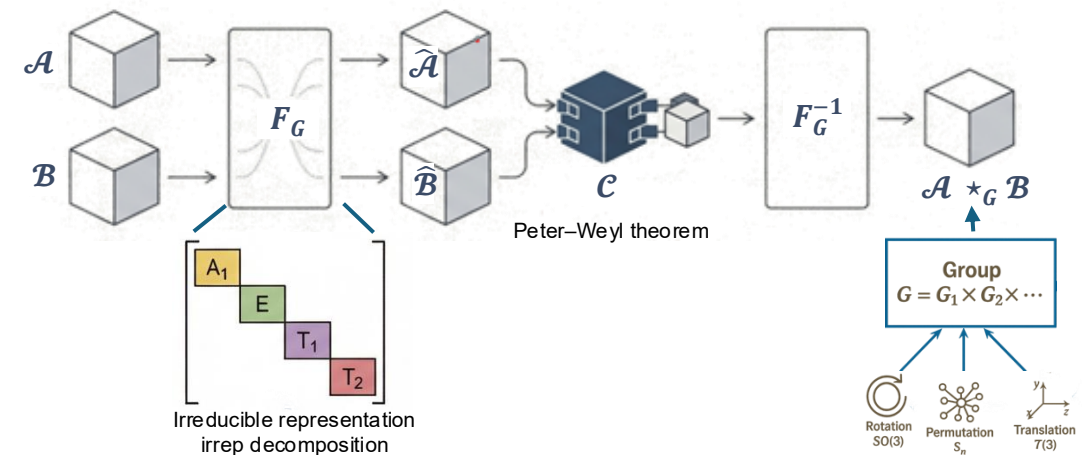
The \star_G tensor algebra: from optimal decomposition to symmetry discovery

From molecules to (tensor) algebra



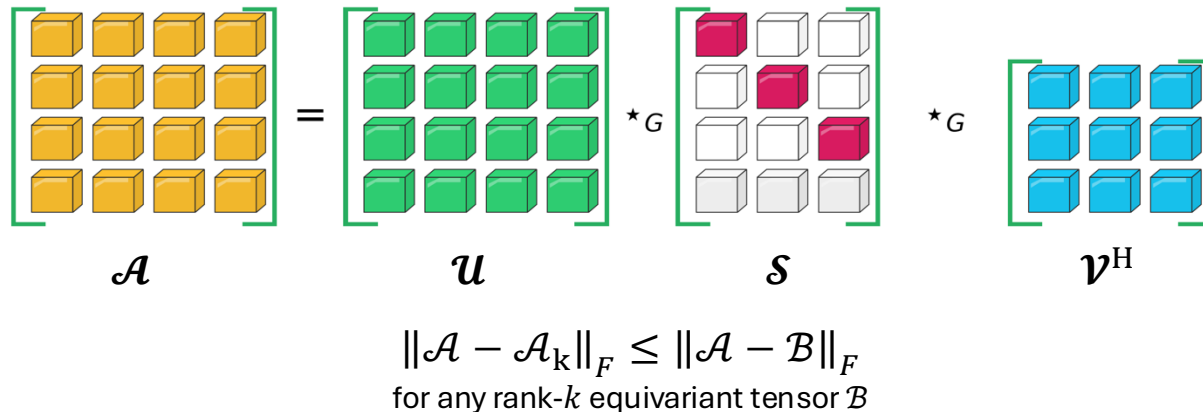
Data vectorization leads to loss of structural information

The \star_G product



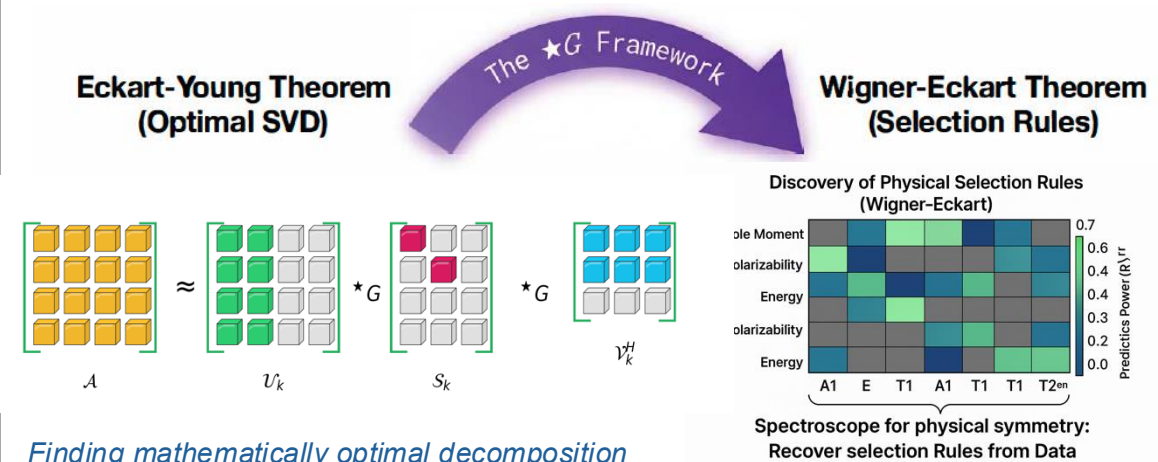
Symmetry is in the algebra, not the architecture

The \star_G -SVD and irreducible representation decomposition



Provably Optimal low rank compression

From Eckart-Young to Wigner-Eckart



Finding mathematically optimal decomposition (Eckart-Young) led to inadvertently recovering the physical selection rules (Wigner-Eckart)